

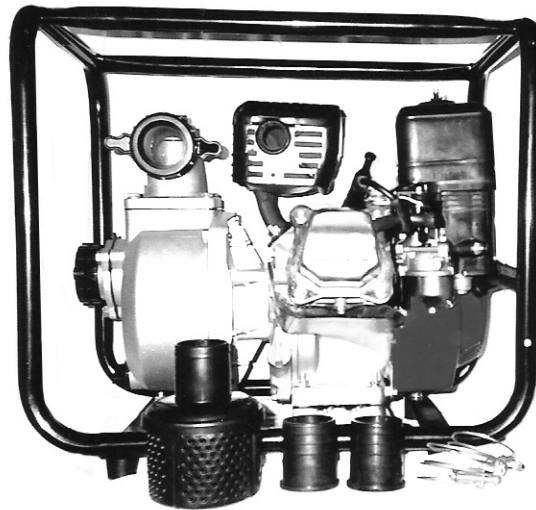
CENTRAL MACHINERY

®

2" CLEAR WATER PUMP 5.5 HP - OVERHEAD VALVE ENGINE

Model 93662

ASSEMBLY AND OPERATING INSTRUCTIONS



Diagrams within this manual may not be drawn proportionally.
Due to continuing improvements, actual product may differ slightly from the product described herein.

Distributed exclusively by Harbor Freight Tools®.

3491 Mission Oaks Blvd., Camarillo, CA 93011

Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.**

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For technical questions or replacement parts, please call 1-800-444-3353.

SPECIFICATIONS

Pump Type	Centrifugal / Requires Priming
Maximum Flow	145 GPM
Maximum Head Discharge	86 Feet
Maximum Suction Lift	26 Feet
Pump Speed	3600 RPM
Inlet/Outlet Size	2"
Engine	5.5 HP / Recoil Start Air Cooled / 4-Stroke Overhead Valve / Single Cylinder Engine Model: JF-168 Displacement: 163cc Fuel Required: Unleaded Gasoline Fuel Tank Capacity: 0.78 Gallons Oil Capacity: 0.63 (Approx. 2/3) Quart Operating Capacity: Approximately 2.8 Hours On Full Fuel Tank EPA Compliant: (JDG-NRSI-04-02) CARB Certification: (2004-CA S.I. SORE's Compliant)
Accessories	2" Inlet Plastic Strainer / Wire Hose Clamps (Qty. 3) / Spark Plug Socket 2" x 2-1/2" Hose Adapters w/Screw On Caps & Washers (Qty. 2)
Net Weight	56 Pounds


The Emission Control System for this pump's engine is warranted for standards set by the U.S. Environmental Protection Agency and by the California Air Resources Board (also known as CARB). For warranty information, refer to the back two pages of this manual.

SAVE THIS MANUAL


You will need this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures, parts list and assembly diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep this manual and invoice in a safe and dry place for future reference.

GENERAL SAFETY RULES AND PRECAUTIONS

WORK AREA

1. **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2.  **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control. Protect others in the work area from debris such as chips and sparks. Provide barriers or shields as needed.

PERSONAL SAFETY

1. **Stay alert. Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
3. **Avoid accidental starting. Be sure the Power Switch (98A) is in its “OFF” position before moving the Water Pump *and* before performing any service, maintenance, or cleaning procedures on the unit.**
4. **Remove adjusting keys or wrenches before turning the Water Pump on.** A wrench or a key that is left attached to a rotating part of the machine may result in personal injury.
5. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the power tool in unexpected situations.
6.  **Use safety equipment. Always wear eye protection.** Always wear ANSI approved safety impact goggles when using this product. ANSI approved hearing protection must also be used.

TOOL USE AND CARE

1. **Do not force the tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
2. **Do not use the Water Pump if the Engine’s Power Switch (98A) does not turn it on or off.** Any tool that cannot be controlled with its power switch is dangerous and must be replaced.
3. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
4. **Maintain tools with care.** Properly maintained tools with a sharp cutting edge are less likely to bind and are easier to control. Do not use a damaged tool. Tag damaged tools “Do not use” until repaired.
5. **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool’s operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
6. **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

SERVICE

1. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
2. **When servicing a tool, use only identical replacement parts. Follow instructions in the “*Inspection, Maintenance, And Cleaning*” section of this manual.** Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES AND PRECAUTIONS

1. **Your Warranty is voided if you do not put engine oil in the Engine’s crankcase prior to its first use.** Before each use, check the oil level. Never run the Engine with low or no engine oil. Running the Engine with low or no oil will permanently damage the unit.
2. **Maintain labels and nameplates on the Water Pump.** These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
3. **Make sure the Water Pump is located on a flat, level, sturdy surface capable of supporting the weight of the Water Pump and any additional tools and equipment.**
4. **Industrial applications must follow OSHA guidelines.**
5. **Never stand on the Water Pump.** Serious injury could result if the Water Pump is tipped.
6. **Never leave the Water Pump unattended when it is running.** Turn off the Engine before leaving.
7. **Do not allow children and other unauthorized people to handle or play with the Water Pump.**
8. **Use this Water Pump outdoors only.** Do not operate the Water Pump in a closed area or in a poorly ventilated area. When running, the Engine of this Water Pump produces carbon monoxide, a colorless, odorless, toxic fume that, when inhaled, can cause serious personal injury or death.
9. **Do not force the Water Pump.** This tool will do the work better and safer at the speed and capacity for which it was designed.

FIRE AND EXPLOSION PRECAUTIONS

1. **Gasoline fuel and fumes are flammable, and potentially explosive.** Use proper fuel storage and handling procedures. Always have multiple ABC class fire extinguishers nearby.

2. **Keep the Water Pump, its Engine, and surrounding areas clean at all times.**
3. **When spills of fuel or oil occur, they must be cleaned up immediately.** Dispose of fluids and cleaning materials as per any local, state, or federal codes and regulations. Store oil rags in a covered metal container.
4. **Never store fuel or other flammable materials near the Water Pump.**
5. **Do not smoke, or allow sparks, flames, or other sources of ignition around the Water Pump.**
6. **Keep grounded conductive objects, such as tools, away from exposed, live electrical parts and connections to avoid sparking or arcing.** These events could ignite fumes or vapors.
7. **Do not refill the Fuel Tank while the Engine is running or while the Engine is still hot.** Do not operate the Water Pump with known leaks in the fuel system.
8. **Use only Engine manufacturer recommended fuel and oil.**

MECHANICAL PRECAUTIONS

1. **Prior to performing service, maintenance, or cleaning procedures, always make sure the Engine's Power Switch (98A) is in its "OFF" position. Allow the Engine and Water Pump to completely cool. Then, remove the spark plug from the Engine.**
2. **Do not alter or adjust any part of the Water Pump or Engine that is assembled and supplied by the manufacturer.**
3. **Always follow and complete scheduled Water Pump and Engine maintenance.**

CHEMICAL PRECAUTIONS

1. **Avoid contact with hot fuel, oil, exhaust fumes, and solid surfaces.**
2. **Avoid body contact with fuels, oils, and lubricants used in the Water Pump and Engine.** If swallowed, seek medical treatment immediately. Do not induce vomiting if fuel is swallowed. For skin contact, immediately wash with soap and water. For eye contact, immediately flush eyes with clean water.

NOISE PRECAUTION

Prolonged exposure to noise levels above 85 dBA is hazardous to hearing. Always wear ANSI approved hearing protection when operating or working around the Water Pump when it is running.

MISC. PRECAUTIONS

1. **WARNING:** The brass components of this product contain lead, a chemical known to the State of California to cause birth defects (or other reproductive harm). (California Health & Safety code § 25249.5, *et seq.*)
2. **People with pacemakers should consult their physician(s) before use.** Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. Caution is necessary when near engine's mag-neto or recoil starter.
3. **WARNING!** The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

SAVE THESE INSTRUCTIONS

UNPACKING

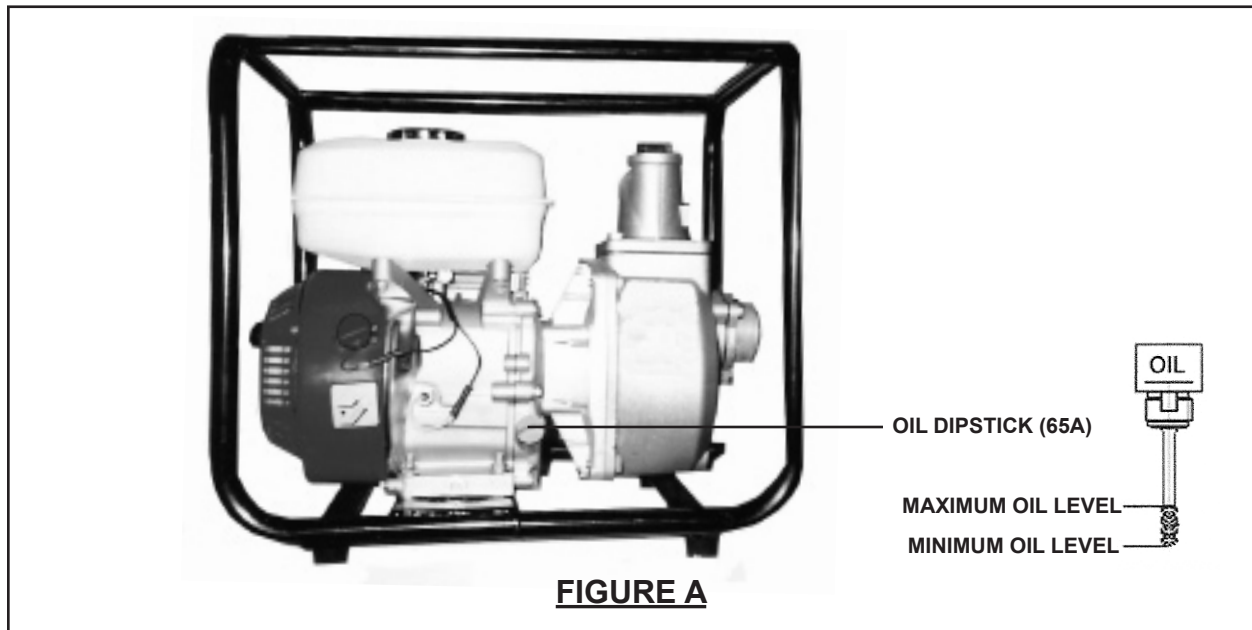
When unpacking, check to make sure all the parts shown on the **Parts Lists on pages 14 and 15** are included. If any parts are missing or broken, please call Harbor Freight Tools at the number shown on the cover of this manual as soon as possible.

ASSEMBLY INSTRUCTIONS

CAUTION! Always make sure the Power Switch (98A) of the Engine is in its “OFF” position prior to performing any service, maintenance, or cleaning of the Water Pump or Engine.

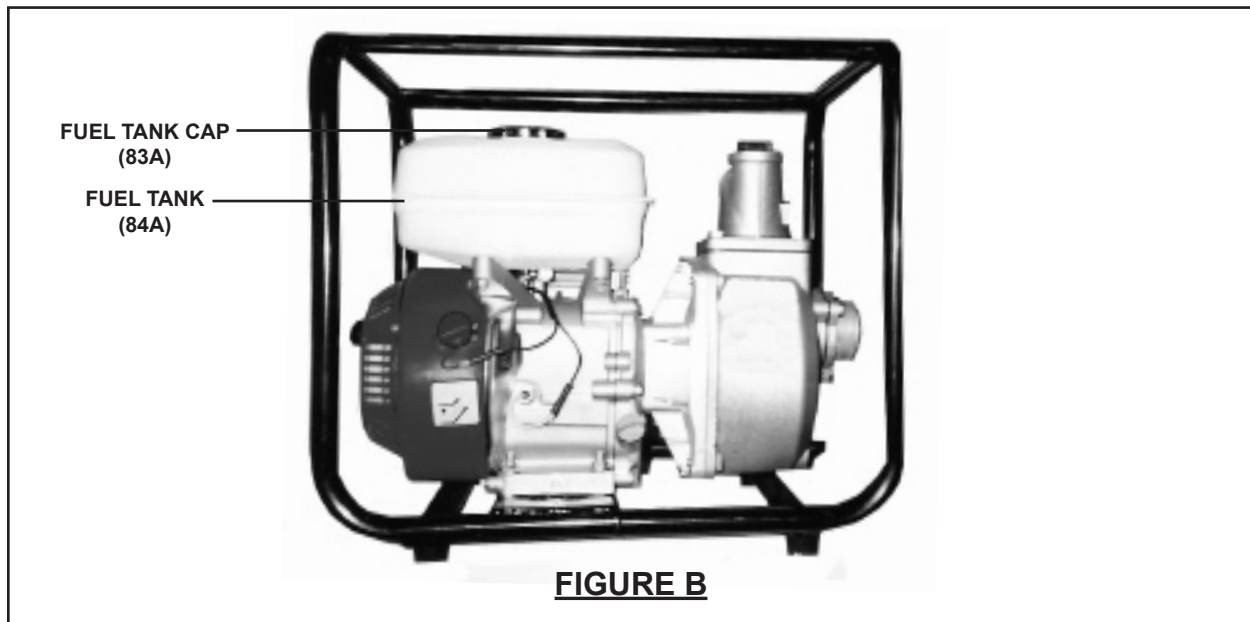
To Add Engine Oil:

1. **IMPORTANT!** Prior to first using the Water Pump, the Engine **MUST** be filled with a high quality 10W-30 grade engine oil. (See Figure A.)



2. To do so, *unscrew* and remove the Engine Oil Dipstick (65A). Pour approximately 2/3 quart of engine oil into the Dipstick Hole. **Do not overfill.** (See Figure A.)
3. Clean the Oil Dipstick (65A). Then screw the Dipstick fully back into the Dipstick Hole. Unscrew and remove the Oil Dipstick again, and observe the level of engine oil on the Dipstick. The oil level should appear between the “**MINIMUM**” and “**MAXIMUM**” indicator marks on the Oil Dipstick. (See Figure A.)
4. If necessary, continue adding engine oil, while rechecking the Oil Dipstick (65A), until the oil level reaches the “**MAXIMUM**” indicator on the Oil Dipstick. **Do not exceed the “MAXIMUM” indicator mark on the Oil Dipstick.** (See Figure A.)
5. When finished adding engine oil, carefully screw the Oil Dipstick (65A) back into the Dipstick Hole. (See Figure A.)

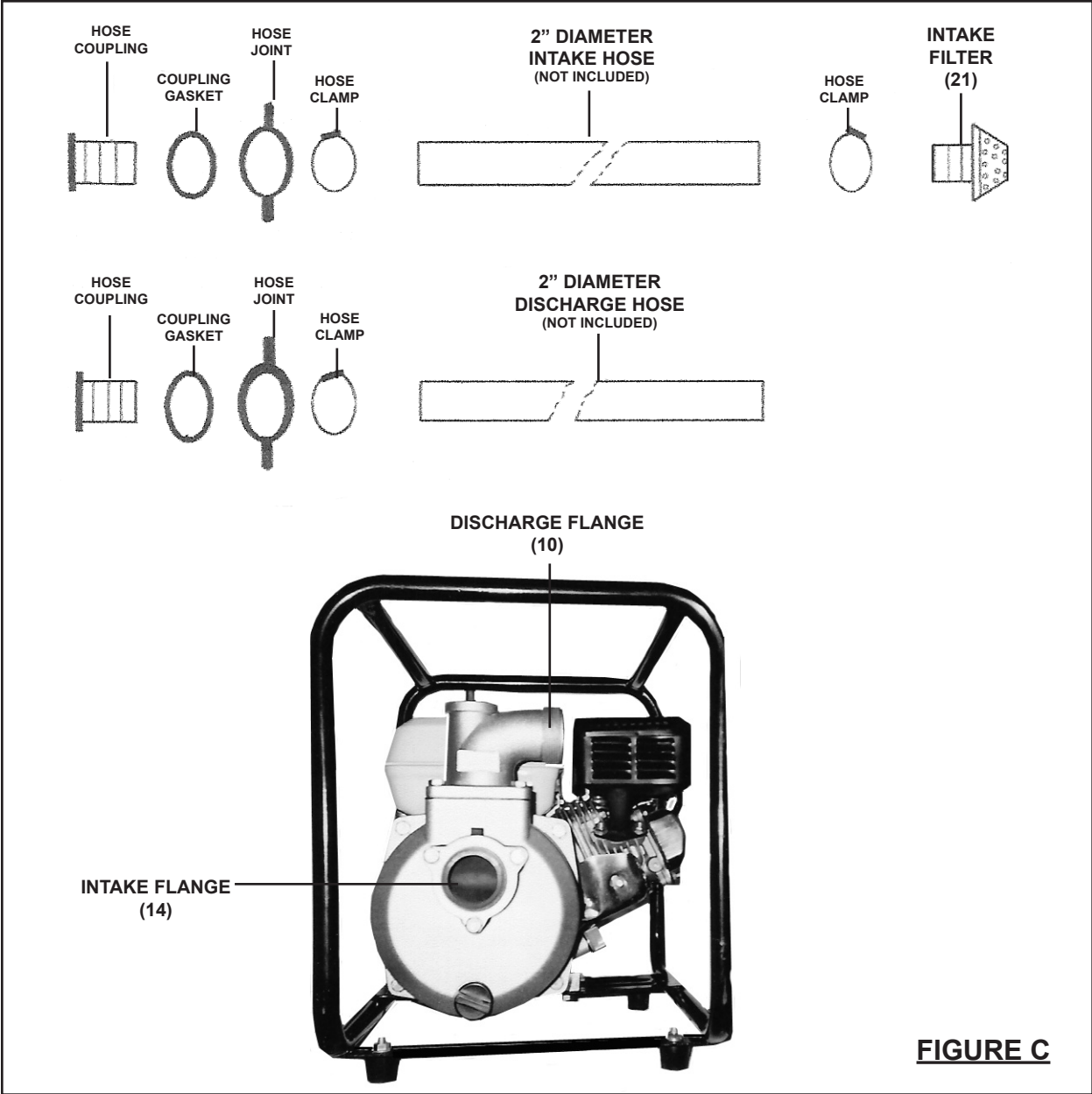
To Fill The Fuel Tank:



1. Prior to first using the Water Pump, the Fuel Tank (84A) **MUST** be filled with high octane **unleaded** gasoline. **(See Figure B.)**
2. To do so, remove the Fuel Tank Cap (83A) and fill the Fuel Tank with unleaded gasoline. Then, replace the Fuel Tank Cap. Thereafter, check the Fuel Tank (84A) for the amount of unleaded gasoline. When necessary, refill the Fuel Tank. **(See Figure B.)**



To Connect An Intake Hose & Discharge Hose To The Water Pump:

1. The Intake Filter (21) that is provided with the Water Pump should be attached to the end of the Intake Hose (not included) with a Hose Clamp that is provided with the Intake Union Set (9). **(See Figure C, next page.)**
2. To connect the other end of the Intake Hose to the Water Pump, slide the Coupling Gasket onto the Hose Coupling of the Intake Union Set (9). Slide the Hose Clamp and Hose Joint of the Intake Union Set (9) onto the end of the Intake Hose. Insert the Intake Hose onto the Hose Coupling, and firmly tighten the Hose Clamp to secure the Intake Hose onto the Hose Coupling. Then, screw the Hose Joint onto the Intake Flange (14) of the Water Pump. **(See Figure C.)**
3. To connect a 2" *diameter* Discharge Hose (not included) to the Water Pump, slide the Coupling Gasket onto the Hose Coupling of the Discharge Union Set (9). Slide the Hose Clamp and Hose Joint of the Discharge Union Set (9) onto the end of the Discharge Hose. Insert the Discharge Hose onto the Hose Coupling, and firmly tighten the Hose Clamp to secure the Discharge Hose onto the Hose Coupling. Then, screw the Hose Joint onto the Discharge Flange (10) of the Water Pump. **(See Figure C.)**



OPERATING INSTRUCTIONS

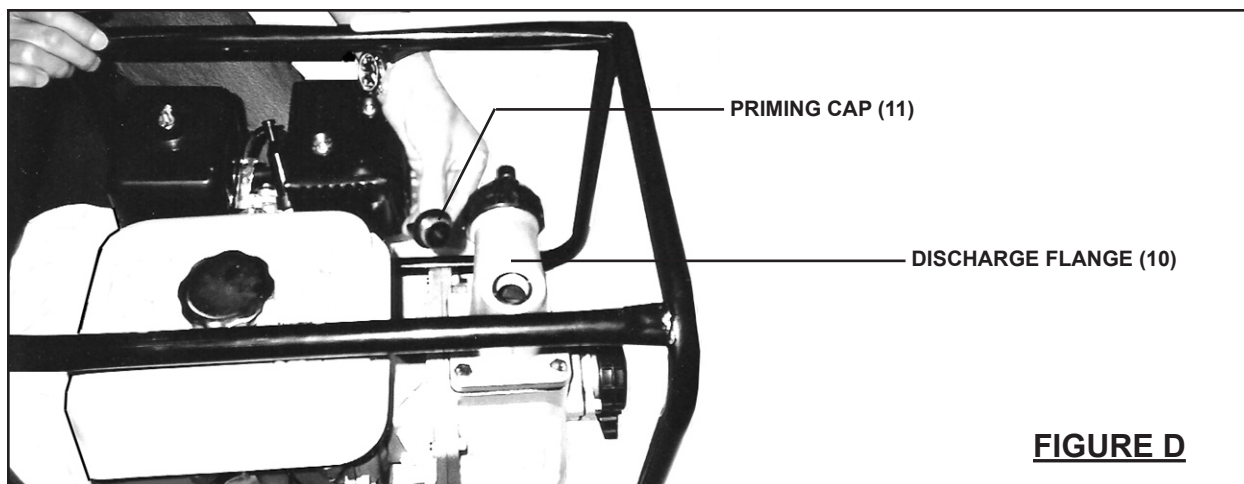
To Properly Locate The Water Pump:

1.  **WARNING!** Use this Water Pump outdoors only. Do not operate the Water Pump in a closed area or in a poorly ventilated area. **When running, the Engine of this Water Pump produces carbon monoxide, a colorless, odorless, toxic fume that, when inhaled, can cause serious personal injury or death.**
2. **Keep your work area clean and well lit.** Cluttered and dark areas invite accidents.
3.  **Do not operate the Water Pump in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** The Water Pump and its Engine can create sparks which may ignite the dust or fumes.
4. Make sure the Water Pump is located on a flat, level, sturdy surface capable of supporting the weight of the Water Pump and any additional tools and equipment.
5. Route the Intake Hose with its Intake Filter (21) fully immersed in the water supply source. Then, make sure to secure the Intake Hose in place to keep it from moving once the Water Pump is turned on. **NOTE:** The maximum suction lift of the Water Pump is **26** feet. The Intake Hose should be kept as short as possible for more efficient operation.
6. Route the Discharge Hose to the desired discharge location. If necessary, connect additional Discharge Hoses to direct the discharge to the desired location. Then, secure the Discharge Hose in place to keep it from moving once the Water Pump is turned on.

Note: The maximum discharge length of the Water Pump is **86** feet. The Discharge Hose should be kept as short as possible for more efficient operation.

To Prime The Water Pump:

1. The Water Pump **MUST** be primed with clean water *prior to each use* of the Pump. To Prime the Water Pump, unscrew and remove the Priming Cap (11) located at the top of the Discharge Flange (10). **(See Figure D, next page.)**
2. Fill the Discharge Flange (10) to its top with clean water. Then, replace the Priming Cap (11). **(See Figure D.)**



To Start And Stop The Engine:

Note: Only use this pump to pump unheated clean water. Other liquids may damage the pump and/or be hazardous.

1. Once the Engine is started, the Water Pump will run continuously until the Engine is turned off.
2. When finished using the Water Pump, turn off the Engine. Make sure to allow the Water Pump and its Engine to completely cool before moving the Water Pump or storing the unit.

INSPECTION, MAINTENANCE, AND CLEANING

1. **CAUTION!** Always make sure the Power Switch (98A) of the Engine is in its “OFF” position prior to performing any service, maintenance, or cleaning of the Water Pump or Engine.
2. **Before each use**, inspect the general condition of the Water Pump. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, loose hose connections, and any other condition that may affect the safe operation of the Water Pump. If abnormal noise or vibration occurs, have the problem corrected before further use.
Do not use damaged equipment.
3. **Before each use**, check the **Engine oil level** in the Engine. If necessary, fill the crankcase of the Engine with the proper amount and type of engine oil.
4. **Before each use**, check the Inlet Filter (21) for accumulated debris, rocks, and other objects that may clog the Inlet Filter.
5. **If the Water Pump is not in use due to dry conditions, etc.**, prime the Water Pump and activate the unit once every three months.
6. **In cold weather**, when if the Water Pump is not in use, protect the interior of the Pump from freezing by draining any remaining water and pumping a permanent type automotive antifreeze containing a rust inhibitor through the system. A 50% mixture with clean water is recommended. Make sure to flush the system with a neutralizing liquid prior to reuse of the unit.
7. **To clean the Water Pump**, use a garden hose and a mild detergent. Avoid introducing water into the interior parts of the Engine.
8. **When storing the Water Pump**, make sure to store the unit in a clean, dry, safe location out of reach of children and other unauthorized people.
9. **Engine maintenance:** Refer to the Engine manufacturer’s manual for complete inspection, maintenance, and cleaning instructions.
10. **CAUTION! All maintenance, service, or repairs not mentioned in this manual must only be performed by a qualified service technician.**

TROUBLESHOOTING

Engine Start Difficulty or Lack of Power	Cause	Solution
Fuel System	1. Insufficient fuel.	1. Add fuel.
	2. Fuel filter requires cleaning or replacement.	2. Clean the fuel filter or replace with a new fuel filter.
	3. Fuel is contaminated.	3. Replace fuel in both fuel tank and carburetor.
Control System	1. Ignition switch (equipment side) is at "OFF" position.	1. Turn the ignition switch to "ON".
	2. Choke is at "OPEN" position when the engine is warm.	2. Turn the choke lever to "CLOSED" position.
Ignition System	1. Spark plug faulty fouled or improperly gapped.	1. Clean or replace spark plug.
	2. Spark plug covered with too much gasoline.	2. Dry the spark plug and restart the engine.
Other	1. Many possibilities.	1. Take the engine to a qualified service technician.
Pump cannot pump the water	1. Priming water is not enough.	1. Add full of priming water.
	2. Filter is clogged.	2. Clean or replace.
	3. Hose clips are loosen.	3. Install the clips securely.
	4. Hose are damaged.	4. Replace the hose.
	5. Suction head is too high.	5. Adjustment.
	NOTE: If the water pump still does not operate properly, take the pump to a qualified service technician.	

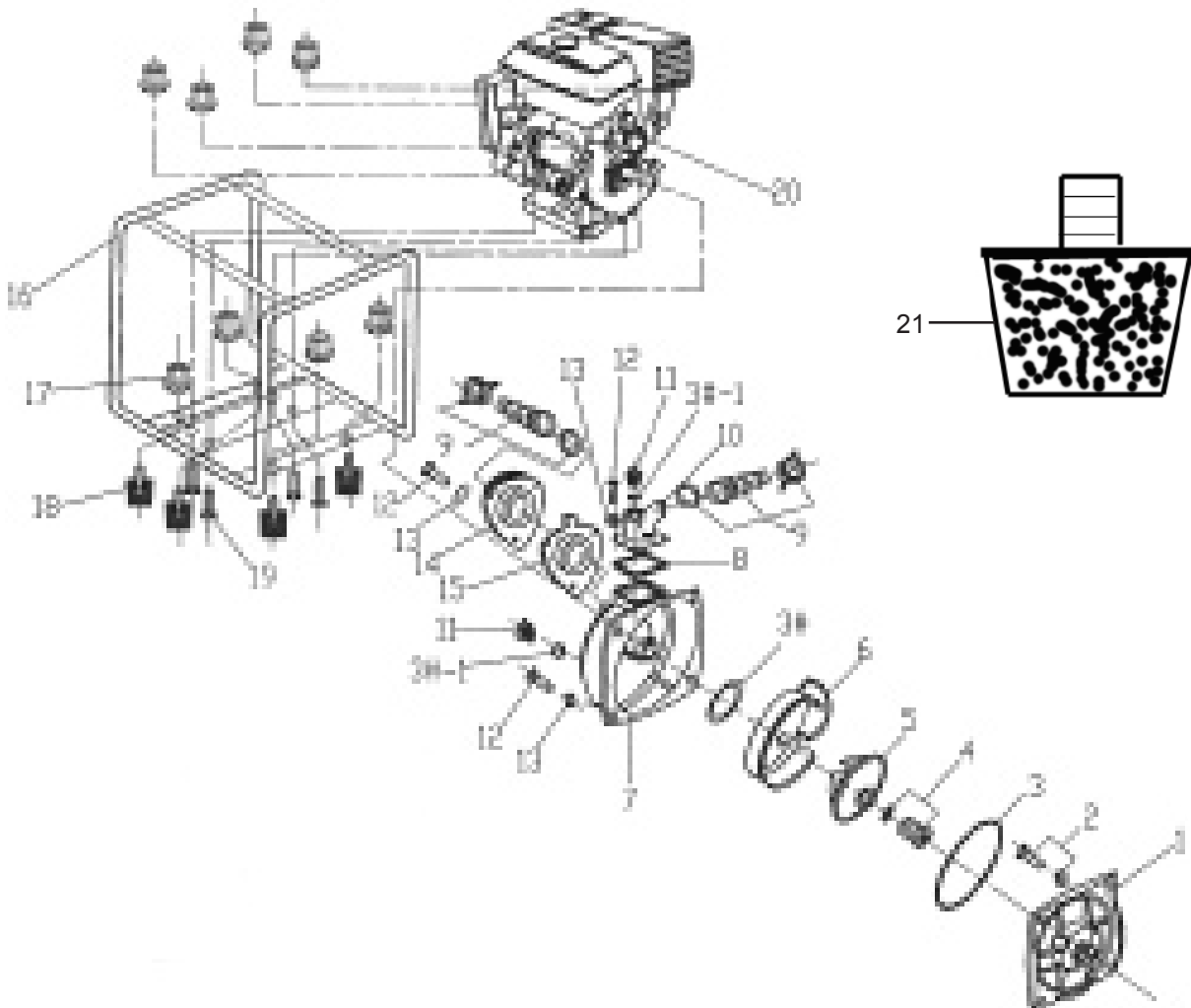
PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISKS AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

PARTS LIST & ASSEMBLY DIAGRAM - WATER PUMP

Part	Description	Qty.
1	Cover	1
2	Hex Bolt	1
3	O-Ring	4
4	Mechanical Seal	1
5	Impeller	1
6	Casing	1
7	Pump Housing	1
8	Discharge Packing	1
9	Intake/Discharge Union Set	1 ea.
10	Discharge Flange	2
11	Priming Cap	1
12	Bolt	9

Part	Description	Qty.
13	Washer	9
14	Intake Flange	1
15	Check Valve	1
3#	O-Ring	1
3#-1	O-Ring	2
16	Tube Frame	1
17	Screw	8
18	Oscillation Absorber	4
19	Bolt	4
20	Gasoline Engine	1
21	Intake Filter	1



Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

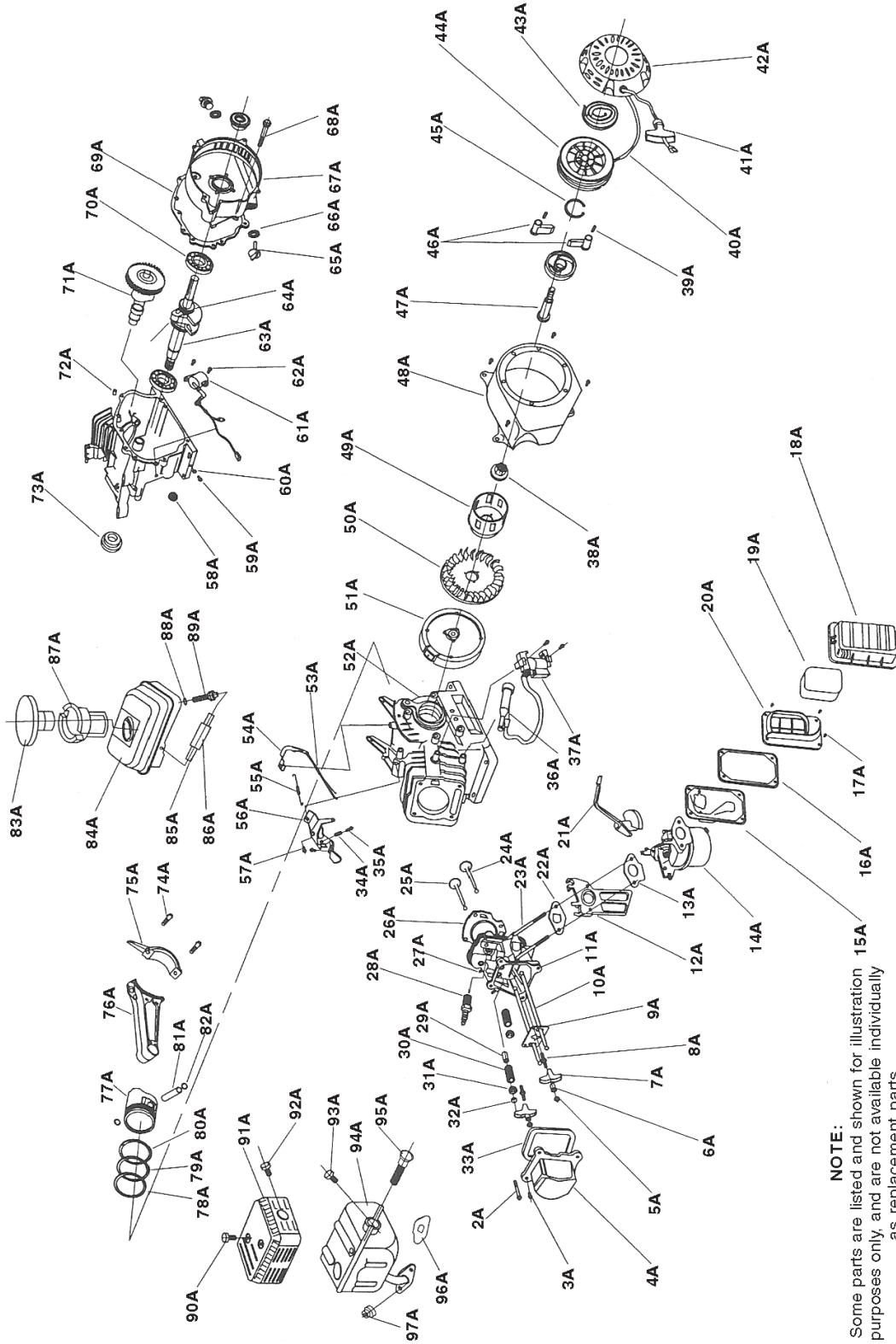
PARTS LIST - ENGINE

Part	Description	Qty.	Part	Description	Qty.
2A	Cylinder Head Bolt	4	51A	Flywheel Magneto	1
3A	Cylinder Head Cover Bolt	4	52A	Cylinder Block	1
4A	Cylinder Head Cover	1	53A	Speed Control Lever	1
5A	Lock Nut	2	54A	Governor Arm	1
6A	Adjusting Screw	2	55A	Governor Spring	1
7A	Rocker Arm	3	56A	Governor Support	1
8A	Rocker Arm Bolt	2	57A	Bolt (M6-15)	2
9A	Valve Push Rod Guiding Board	1	58A	Oil Alert Nut	1
10A	Valve Push Rod	2	59A	Plug (M10-15)	2
11A	Cylinder Head	1	60A	Plug Washer	2
12A	Carburetor Shield	1	61A	Oil Alert	1
13A	Carburetor Packing	1	62A	Bolt (M6)	2
14A	Carburetor Assembly	1	63A	Crankshaft	1
15A	Air Cleaner Case	1	64A	Crankshaft Gear	1
16A	Air Cleaner Seal	1	65A	Oil Dipstick	2
17A	Bolt (M6)	4	66A	Oil Dipstick Seal Ring	2
18A	Air Cleaner Cover	1	67A	Gear Casing	1
19A	Air Cleaner Element	1	68A	Bolt (M8-35)	6
20A	Air Cleaner Separator	1	69A	Gear Case Packing	2
21A	Choke Lever	1	70A	Bearing	2
22A	Carburetor Packing II	1	71A	Camshaft Assembly	1
23A	Stud Bolt (M6-109)	2	72A	Locating Pin	4
24A	Intake Valve	1	73A	Oil Seal	2
25A	Exhaust Valve	1	74A	Connecting Rod Bolt	2
26A	Cylinder Head Gasket	1	75A	Connecting Rod Cap	1
27A	Exhaust Pipe Stud	2	76A	Connecting Rod	1
28A	Spark Plug	1	77A	Piston	1
29A	Valve Guide	2	78A	Compression Ring 1	1
30A	Valve Spring	2	79A	Compression Ring 2	1
31A	Rocker Shaft Circlip	2	80A	Oil Scraper Ring	1
32A	Anti-Wear Valve Stem Protector	2	81A	Piston Pin	1
33A	Cylinder Head Cover Packing	1	82A	Piston Pin Circlip	2
34A	Governor Spring	1	83A	Fuel Tank Cap	1
35A	Bolt	1	84A	Fuel Tank	1
36A	High Tension Line	1	85A	Fuel Pipe	1
37A	Ignition Coil	1	86A	Fuel Pipe Protecting Tube	1
38A	Nut (Special 14mm)	1	87A	Fuel Filter	1
39A	Starter Ratchet Spring	2	88A	O-Ring	1
40A	Start Rope	1	89A	Fuel Valve	1
41A	Start Handle	1	90A	Bolt (M5-8)	2
42A	Starting Case Assembly	1	91A	Complete Outside Cover	1
43A	Spiral Spring	1	92A	Bolt (M5-8)	2
44A	Starting Wheel	1	93A	Bolt (M4-8)	1
45A	Circlip	1	94A	Complete Silencer	1
46A	Starting Ratchet	2	95A	Exhaust Filter Cartridge Assy.	1
47A	Friction Plate Screw	1	96A	Exhaust Pipe Packing	1
48A	Cover	1	97A	Bolt (M5-38)	2
49A	Starter Pulley	1	98A	Power Switch	1
50A	Cooling Fan	1			

Engine Maintenance

The Spark Plug is LD(F7RTC), BPR6ES(NGK). The Spark Plug gap setting is 0.7--0.8mm. The Intake Valve clearance is 0.15mm, Exhaust Valve clearance is 0.20mm. The valve clearance needs to be adjusted after 100 hours. **Change the engine oil after 20 hours or internal one month.**

ASSEMBLY DIAGRAM - ENGINE



NOTE:
Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

Emission Control System Warranty

California and United States Emission Control Defects Warranty Statement

The California Air Resources Board (herein CARB), the United States Environmental Protection Agency (herein EPA), and Harbor Freight Tools® (herein HFT) are pleased to explain the emission control system warranty on your 1995 and later Small Off-Road Engine (herein engine). In California, the engine must be designed, built and equipped to meet the State's stringent anti-smog standards. Elsewhere within the United States, new off-road, spark-ignition engines certified for model year 1997 and later, must meet similar standards set forth by the EPA. HFT must warrant the emission control system on your engine for the periods of time described below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor or fuel-injection system, and the ignition system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, HFT will repair your engine at no cost to you including diagnosis, parts and labor.

Manufacturer's Warranty Coverage

The 1995 and later engines are warranted for two (2) years. If any emission-related part on your engine is defective, the part will be repaired or replaced by HFT.

Harbor Freight Tools Emission Control Defects Warranty Coverage

Engines are warranted for a period of two (2) years relative to emission control parts defects, subject to the provisions set forth below. If any emission related part on your engine is defective, the part will be repaired or replaced by HFT.

Owner's Warranty Responsibilities

- As the engine owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. HFT recommends that you retain all receipts covering maintenance on your engine, but HFT cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the engine owner, you should, however, be aware that HFT may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.
- You are responsible for shipping your engine to a HFT warranty station as soon as a problem exists. Contact the HFT Customer Service department at the number below to make shipping arrangements. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Harbor Freight Tools Customer Service Department at 1-800-444-3353.

Harbor Freight Tools Emission Control Defects Warranty Provisions

1. Length of Coverage

HFT warrants to a first retail purchaser and each subsequent purchaser that the engine is free from defects in materials and workmanship that cause the failure of warranted parts for a period of two (2) years after the date of delivery to the first retail purchaser.

2. No Charge Repair or Replacement

Repair or replacement of any warranted part will be performed at no charge to the owner if the work is performed through a warranty station authorized by HFT. For emissions warranty service, contact the HFT Customer Service Department at 1-800-444-3353.

3. Consequential Damages Coverage

Coverage under this warranty shall also extend to the failure of any engine components caused by the failure of any warranted part while it is still covered under this warranty.

4. Coverage Exclusions

Warranty claims shall be filed in accordance with the provisions of the HFT warranty policy explained in the box at the top of the previous page. HFT shall not be liable for any loss of use of the engine, for any alternative usage, for any damage to goods, loss of time, or inconvenience. Warranty coverage shall also be excluded for any part which fails, malfunctions, or is damaged due to failure to follow the maintenance and operating instructions set forth in the Owner's Manual including, but not limited to:

- (a) use of parts which are not authorized by HFT
- (b) improper installation, adjustment or repair of the engine or of any warranted part unless performed by an authorized warranty center
- (c) failure to follow recommendations on fuel use contained in the Owner's Manual
- (d) improper or inadequate maintenance of any warranted parts
- (e) repairs performed outside of the authorized warranty service dealers
- (f) alterations by changing, adding to or removing parts from the engine.

Emission Control System Warranty - continued

Harbor Freight Tools Emission Control Defects Warranty Provisions

5. Service and Maintenance

Component parts which are not scheduled for replacement as required maintenance or are scheduled only for regular inspection to the effect of "repair or replace as necessary" are warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance is warranted for the period of time up to the first scheduled replacement point for that part. Any replacement part, provided it is equivalent in durability and performance, may be used in performance of maintenance or repairs. The owner is responsible for commissioning a qualified technician/mechanic to perform all required maintenance, as outlined in the **Inspection, Cleaning, and Maintenance** section on page 17 of this manual.

6. Warranted Parts

1) Fuel Metering System

- i) Carburetor and its internal parts.
- ii) Fuel pump (if so equipped).
- iii) Cold start enrichment system.

2) Air Induction System

- i) Intake pipe/manifold.
- ii) Air cleaner.

3) Ignition System

- i) Spark plug.
- ii) Magneto ignition system.

4) Catalyst System (if so equipped)

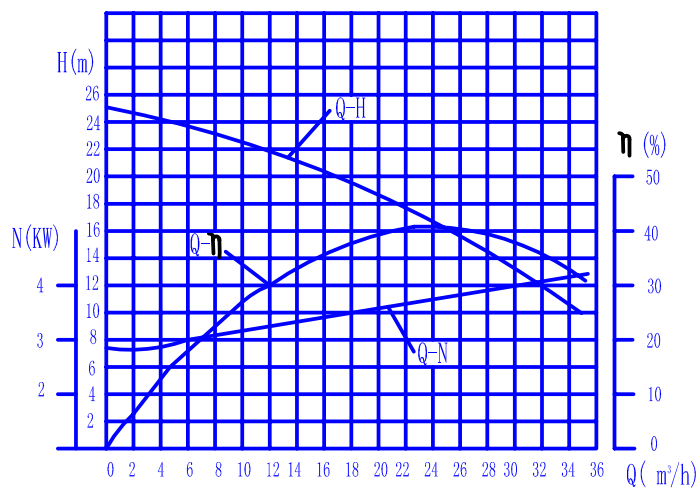
- i) Exhaust pipe stud.
- ii) Muffler.
- iii) Catalytic converter (if so equipped).

5) Miscellaneous items Used in Above Systems

- i) Vacuum, temperature and time sensitive valves and switches.
- ii) Hoses, belts, connectors, and assemblies.

PUMP PERFORMANCE FLOW CHART

WP20 Water Pump



Q--Discharge Capacity

N--Housepower

H--Total Head

η--Efficiency